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names from their original form by the author of the "Flora of the Rocky Mountains." These may, however, have been typographical errors. Rafinesque has *Lepadena* (p. 545.) which Rydberg changed to *Lepadenia*. *Leucoma* Ehrh. becomes *Leucocoma*.

The treatment of the amphibious smartweeds which admits of *Persicaria coccinea* (Muhl.) Greene and *P. Muhlenbergii* (Meisn.) Small, as separate species is decidedly interesting. The most conservative view of the consideration of these would scarcely admit of them as more than nomenclatorial synonyms, whereas the most analytical segregation of forms would perhaps reveal them as scarcely separately tenable. The treatment is, however, scarcely more that of the ordinary hidebound manual, though in this case it even obscures still more than ever the identity of these plants. Our herbarium shows spacimens with various shoots on one plant-stock answering respectively all the descriptions of what is ordinarily described as the different species, *P. Hartwrightii*, *P. Coccinea*, *P. Muhlenbergii* and for that matter what some call *P. amphibia*, (whatever that is)! How long will the manuals persist in making confusion worse confounded?

Why Nuttall's *Androcera* (spelled *Androsera*) was admitted for the much older *Nycterium* Ventenat (1903)[2] is not evident, unless accidentally overlooked.

In general it maybe said that great care has been used to bring the "Flora of the Rocky Mountains" to a high standard of usefulness and that oversights are in every respect negligibly few.

Shooting Birds for the Purpose of Identification.

BY BROTHER ALPHONSUS, C. S. C.

In his work entitled "Michigan Bird Life," Mr. Walter Bradford Barrows has the following paragraphs in the introduction, pages 13 and 14:

"The scientific bird student must first of all handle actual birds; since, unfortunate as it may seem to many nature lovers, accurate, absolute and full knowledge of birds can be obtained only by studying them alive, by killing and preparing them for preservation, and by studying and comparing specimens so preserved. As Dr. Elliot

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[1] See Am. Mid. Nat. IV, p. 333.

Cones, one of America's foremost scientists, truly said forty years ago, 'Life, even bird life, is too sacred a thing to be needlessly or thoughtlessly sacrificed.' Yet countless facts of the utmost importance in the scientific study of birds can be obtained only through the sacrifice of bird life, and an ornitholgist who aspires to be an authority upon his science must ruthlessly suppress his natural feelings in this respect and must procure and make use of such material as is absolutely necessary without regard to what are often described as the humane sentiments. This does not mean that any untrained boy has the right to take his gun into the field and kill birds indescriminately or even freely under the impression that his intention to preserve some as specimens and to study such specimens later justify the action. On the contrary the right to collect birds freely for scientific purposes should be carefully restricted to such persons as can give evidence of a serious purpose to use to advantage the specimens so taken. The Michigan law covering this point is clear and strong.

"A moment's thought will convince any one that the student who searches the woods carefully for a bird which he has never seen, who follows up each unknown call or song, watches with care each doughtful and illusive form which suggests the bird desired, and finally, perhaps after hundreds of disappointments, kills a specimen of the much coveted species and measures, preserves and labels it for his own collection, has gained a knowledge of the appearance, habits, notes, size and structure of this species which could be obtained in no other possible way. Not only has he gained all this knowledge with regard to this particular specimen, but in doing so he has exercised, consciously or unconsciously, his powers of observation, comparison and discrimination with regard to scores of other birds, so that his experience has been broadened and his power and judgment very materially strengthened.

"It may seem to some that essentially the same results could be obtained if our student were accompanied to the woods by an instructor who should call his attention to the note of the bird sought, point it out and comment on its peculiarities and after watching the specimen carefully, perhaps through a field glass, record his observations and allow the bird to depart unharmed. Such a method of study unquestionably has its advantages, especially for the bird, but except in the case of a limited number of species, a certain degree of doubt must inevitably attach to such a method of identification, and perhaps the most unfortunate result of this method of teaching lies in the belief which gradually grows up in the pupil's mind that he can identify birds just as well by eye and ear as the professional with his gun.

"At the present time current literature abounds in more or less accurate and beautiful descriptions of birds and bird life, and much of this material has not only high literary merit but considerable scientific value. Nevertheless the trained ornithologist rarely reads such an article without detecting here and there evidences of ignorance or at least inaccuracy, which though not always glaring are nevertheless much to be regretted. It is perfectly true that an average keen-eyed boy or girl can readily learn to know most of the commoner kinds of birds in the vicinity without the use of the gun provided he have the instruction of a competent teacher and in addition have access to a suitable collection of specimens.

"But it is equally certain that no boy so taught, or for that matter any older person, can ever learn to know *all* the birds of his vicinity or even all the plumages of the common species, male and female, old and young, spring and autumn, through such a method of teaching.

"Hence careful ornithologists throughout the country have been led more and more to lay down the rule that the "record" of any species for a given locality should rest upon an actual specimen taken in that locality and either preserved for examination of any one interested or at least examined and identified by a competent authority before being destroyed. Our state lists, as well as our local lists, contain too many records of rare birds which do not come up to these requirements. True, there are cases in which the most fleeting glimpse of a bird is sufficient for its identification by a good observer, yet the best of us make mistakes, just as the best marksman has his "off days," and it is a good rule not to accept as a true record the mere observation of even the best ornithologist, unsupported by a specimen, unless at least there is no improbability in the occurrence of the bird at such a time and place."

In these paragraphs the author contends that it is practically impossible for any person to identify all of the birds in his vicinity, even with the assistance of a competent ornithologist, if specimens of certain species are not taken by shooting them. I wish to offer some reflections on this subject to see if this contention is not somewhat beyond the truth. First of all I shall draw on my own experience, which covers a period of about fourteen years; then I shall state the results that were obtained by young men and boys who did some observing under my direction.

During the years I have been studying birds, I have never made it a practice to do any shooting for the purpose of identifying them. And I think I have successfully identified 156 species, among which are the following: Rusty Blackbird, Acadian Flycatcher, Franklin's Gall, Montana Junco, Bullock's Oriole, King Rail, Solitary Sandpiper, Pine Siskin, Henslow Sparrow, Rough-winged Swallow, Gray-cheeked Thrush, Blue-headed Vireo, Golden winged Warbler, Orange-crowned Warb'er, Sycamore Warb'er. If these species—some of them very difficult to observe—could be identified without killing, I should like to ask why cannot all other species be idenfied in the same manner?

Let us look more particularly at some of the species I have mentioned, and see in what way they may be identified without killing. One means is the process of elimination. We will take first the Rusty Blackbird. Now, I will suppose that I already know three species of black-birds—the Red-winged Blackbird, the Cowbird and the Bronzed Grackle. What possible species remain for this locality (northern Indiana)? There are two—the Yellow-headed Blackbird and the Rusty Blackbird. If I should see a specimen of either of these blackbirds, certainly I could readily distinguish them from each other; and I could also as easily separate them from the species I already know. Does it not, then, seem reasonable to say that I can be absolutely sure of my identification of either of these two species of blackbirds?

But let us take a more difficult case—the Acadian Flycatcher. The flycatchers I have already identified (I will suppose) are the Phoebe, Wood Pewee, Crested Flycatcher, Kingbird, Alder Flycatcher and Yellow-billed Flycatcher. Of those that may possibly be found there remain but two species—the Olive-sided Flycatcher and the Acadian Flycatcher. These two species may be less easily distinguished than were the two kinds of blackbirds described above. Still I think that by learning all I can in books about the markings and the habitat of these two flycatchers, I shall not have any doubt as to their identification when I see either of them. As a matter of fact, when I enter a rather deep wood with considerable undergrowth, I am likely to hear an unfamiliar note. Probably the dense growth of the trees and bushes will make it a very difficult thing to approach near enough to observe the bird's markings accurately. And a further difficulty will be experienced by the constant movements of the bird while flycatching. But by persevering efforts I shall sooner or later obtain a good view of the Acadian Flycatcher, which will fully satisfy me as to its identification.

Another species, so rare that but a single record of it was made in all my observations, will now be taken to decide its identification. This is the Montana Junco, which was seen in a flock of slate-colored Juncos early in autumn. The plumage of this junco was strikingly beautiful compared with the sober coat of the common junco. And with the assistance of Mr. W. B. Barrow's description of the species, I felt satisfied that the specimen I saw was the Montana Junco.

Few pleasures are greater to an ornithologist than when he sees for the first time a new species of bird. The writer had this pleasure on five different occasions in the spring of 1918. The new species I found were the Rusty Blackbird, Franklin's Gall, Fish Hawk, Orange-crowned Warbler and Bullock's Oriole. The last named species was seen on a morning after a very high wind that blew from the west. Fortunately, a friend, who is also an observer of birds, was with me, and he saw the strange oriole first. We approached quite near the apple tree in which the bird was perched and obtained an excellent view of it. We saw at once that it was not a Baltimore Oriole, nor were the markings identical with those of the male Bullock's Oriole. Mature consideration, then, made it clear to us that our bird was a female of this species, which probably had been carried before the storm during the preceding night.

The Orange-crowned Warbler is a species that arrives rather late in May, and is partial to orchards. These two facts were useful to me in identifying this species. On May 27, 1918, I saw a pair of these warblers in an orchard. Now, my identification of this warbler was based on my knowledge of warblers in general, and a comparison of this species with what I knew of it from reading. And I felt satisfied that these birds were Orange-crowned Warblers.

In sending a report of the spring migration of our birds for 1918 to Mr. Amos Butler, author of the *Birds of Indiana*, he was particularly interested in my record of the Franklin's Gull. He wrote to me requesting the facts connected with my identification of the species, and further stated he thought that the species had not hitherto been observed in Indiana. I cannot, of course, say anything definite about this last statement; but my opinion is that Franklin's Gull must occasionally be seen in Indiana along Lake Michigan. This gull is small, with a black head and neck; the bill, also, of the specimen I saw was black. The bird is not timid and may be approached within a few rods.

I have now completed the first part of my attempt to prove that birds can be identified without shooting them. So far I have spoken of my own efforts in this direction, and now it remains for me to say what was done by those who accompanied me on my bird trips. A number of the students at Notre Dame have given some attention to the study of bird life, and they have done remarkably well, I think, for the little time they have devoted to the pursuit. Several young men went out with me occasionally in the springs of 1917 and 1918, and two of them made the acquaintance of 90 species of birds. Among these there were about twenty warblers. Now, every student of birds knows that the warbler family is one of the most difficult to learn. Still the students that observed under my direction did not fail to identify all the warblers we found. And to test their knowledge, I would often ask them to name a certain species of warbler we saw, such as, the female Black-poll, and in time they could succeed in doing it,

I have now set down facts enough, I think, to disprove Mr. Barrow's contention that no person without killing birds can identify *all* the species in his vicinity. Perhaps there is not absolute certainty in every case I have mentioned. But even if this were so, I still hold that most birds, if not all, can be identified by an experienced observer with nothing but a pair of good field glasses.

"Fairy Circles."

BY J. A. NIEUWLAND.

Attention has already been called in these pages to the fact that some species of *Myxomycetes*, notably *Physarum sinuosum*, appear in lawns in formations like the so-called "fairy circles" of some of the higher fungi. Such slime-mould "rings" have been seen annually in summer on the Notre Dame University Quadrangle for a long time. Last spring it was, however, noticed for the first time that